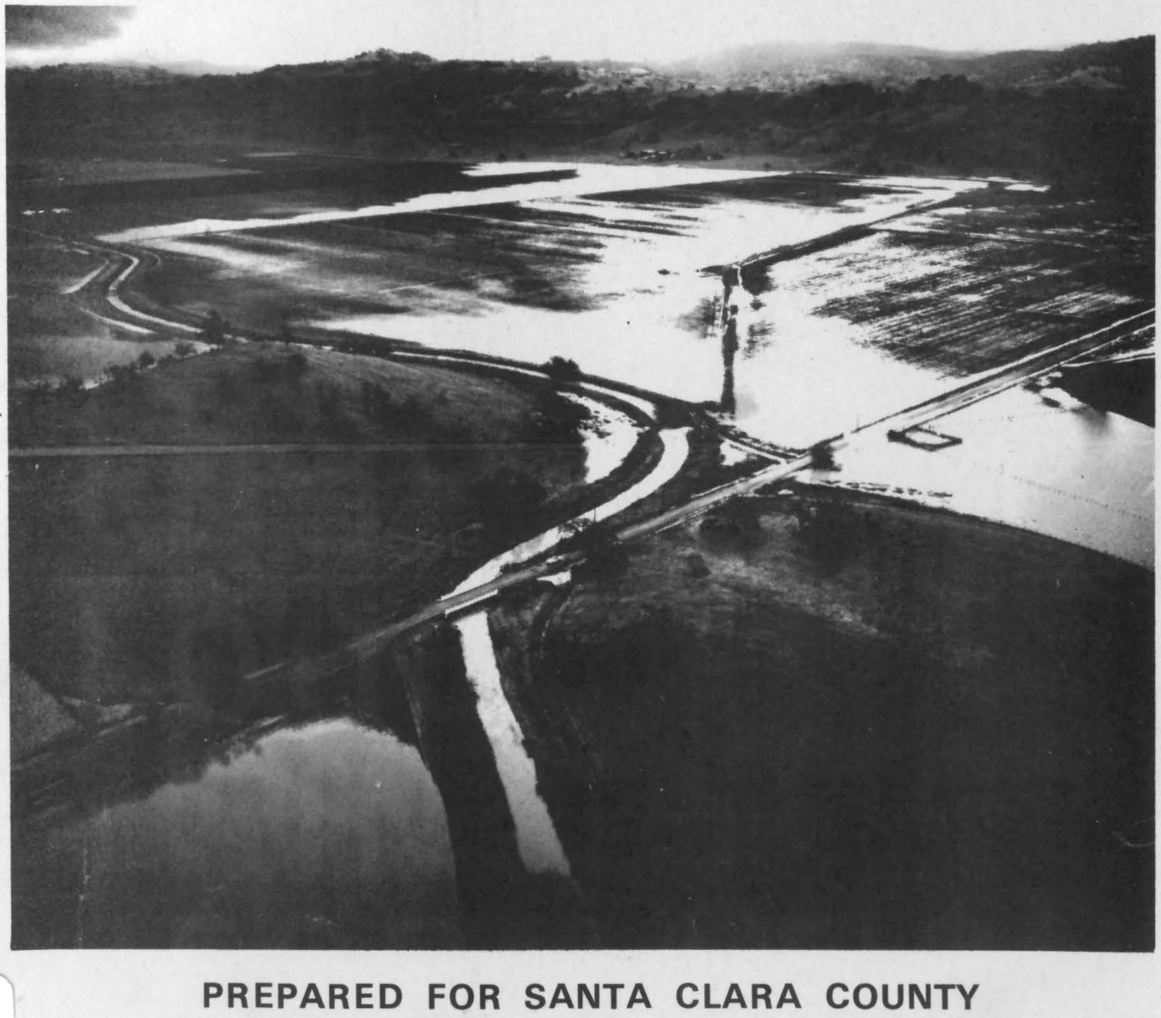
FLOOD PLAIN INFORMATION

FISHER CREEK

SANTA CLARA COUNTY, CALIFORNIA



PREPARED FOR SANTA CLARA COUNTY
FLOOD CONTROL AND WATER DISTRICT
BY THE DEPT. OF THE ARMY,
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS,
SAN FRANCISCO, CA.
JULY 1973

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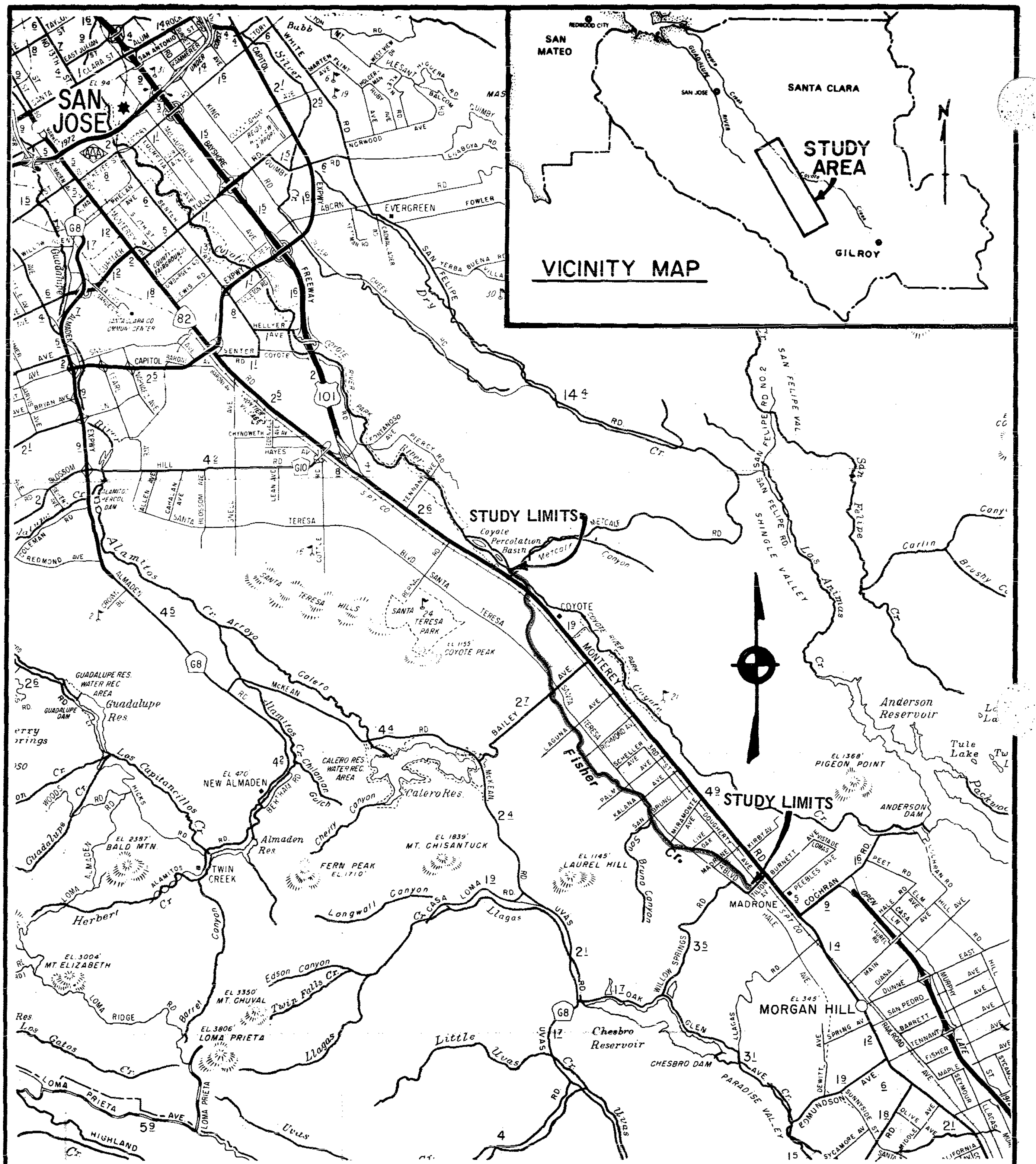

LEGEND

280 INTERSTATE HIGHWAY

101 U. S. HIGHWAY

9 STATE SIGN ROUTE

G2 COUNTY SIGN ROUTE

0 0.5 1 2 3

SCALE IN MILES

BASE MAP REPRODUCED BY PERMISSION OF THE CALIFORNIA STATE AUTOMOBILE ASSOCIATION, COPYRIGHT OWNER.

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
SAN FRANCISCO, CALIFORNIA
FLOOD PLAIN INFORMATION

FISHER CREEK
CALIFORNIA

GENERAL MAP

JULY 1973

PLATE 1

PREFACE

The area covered by this report is subject to flooding from Fisher Creek. The properties on the flood plain along this stream are primarily agricultural and were inundated by the flood of 1955. The open spaces in the flood plain are already being subjected to pressure for development. Studies indicate that even larger floods, than those of the past, are possible.

This report has been prepared because a knowledge of flood potential and flood hazards is important in land use planning and for management decisions concerning flood plain utilization. It includes a history of flooding in the basin and identifies those areas that are subject to possible future floods. Special emphasis is given to those possible future floods through maps, photographs, profiles, and cross sections. The report does not provide solutions to flood problems; however, it does furnish a suitable basis for the adoption of land use controls to guide flood plain development and thereby prevent intensification of the loss problems. It will also aid in the identification of other flood damage reduction techniques such as works to modify flooding and adjustments including floodproofing which might be embodied in an overall flood plain management (FPM) program. Other FPM program studies, those of environmental attributes and the current and future land use role of the flood plain as part of its surroundings, would profit from this information.

At the request of the Santa Clara County Flood Control and Water District and indorsement of the California Department of Water Resources, this report was prepared by the San Francisco District Corps of Engineers under continuing authority provided in Section 206 of the 1960 Flood Control Act, as amended.

Assistance and cooperation of the California Division of Highways, the Santa Clara County Flood Control and Water District and private citizens in supplying useful data and photographs for the preparation of this report are appreciated.

Additional copies of this report can be obtained from the Santa Clara County Flood Control and Water District. The San Francisco District Corps of Engineers, upon request, will provide technical assistance as well as planning guidance and further assistance, including the development of additional technical information.

BACKGROUND INFORMATION

Settlement

Spanish expeditions from Mexico actively explored California during the last half of the 18th Century. The Portola Expedition passed through the Santa Clara Valley in 1769. The Fisher Creek (Laguna Seca) Basin lies on the southwest side of Santa Clara Valley and was first mentioned in 1797. San Jose on the north of the Valley was established in 1777. The Fisher Creek Basin lies within the boundaries of the Laguna Seca and Ojo de Agua de la Coche (Sow Spring) land grants.

The following account of the Rancho Laguna Seca is given in the memoirs of J.C. Fremont.[1] By the middle of February (1846) we were all re-united in the Valley of San Jose, about 13 miles south of the village of that name on the main road leading to Monterey which was about 60 miles distant . . . "The Place which I had selected for rest and re-fitting was a vacant rancho called the Laguna, belonging to Mr. Fisher. I remained here until February, in the most delightful spring season of a most delightful climate. The time was occupied in purchasing horses, obtaining supplies, and thoroughly re-fitting the party."

The rancho had been granted on July 22, 1834, by Governor Figueroa to Juan Alvirez, former alcalde of San Jose and was confirmed to heirs of William Fisher, to whom it was also patented in 1865.

William Fisher was a sea captain from Boston, who came to California and purchased this rancho in 1845. The Fisher family had not yet arrived at their new home at the time of Fremont's February visit.

The Rancho Ojo de Agua de la Coche,[1] an epic of the western movement might be written using as a theme the Martin Murphy family. Martin Murphy, Sr., nearing the age of 60 years, in 1844 arrived in California with his sons and daughters and several grandchildren, having come across the plains from Missouri. At a point on the Missouri River, the Murphy and Stevens parties had joined forces for mutual protection and aid.

Martin Murphy was born in 1785 in Ireland, where he married and where his elder children were born. He finally settled in Santa Clara County near the present Town of Morgan Hill. Purchasing Rancho Ojo de Aqua de la Coche, which had been granted by Governor Figueroa to Juan Maria Hernandez on August 4, 1835, he built an adobe residence between the Town of Morgan Hill and Murphy's Peak, a hill that rises to the west of the town. This house, now crumbled to dust, in which Martin Murphy lived with his motherless unmarried children, stood near the road leading from San Jose to Monterey.

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[1] From "Historic Spots in California" by Hoover, Rensch & Rensch.

Martin J. C. Murphy, a grandson, received the United States patent to the Rancho. This tract is hilly in its western portion along Llagas Creek, and hills rise again in its eastern boundary, but the main central part is rolling. The peak rising just west of the Town of Morgan Hill was for long called, among other names, Murphy's Peak or Twentyone Mile Peak. The town was named for Hiram Morgan Hill, who married Martin Murphy's grandaughter Diana.

The Stream and Its Valley

Fisher Creek is a tributary of Coyote Creek within Santa Clara County, California. Fisher Creek has its headwaters north of Morgan Hill near Madrone, California. The natural drainage area of the basin is about 18.3 square miles; however, Southern Pacific Railroad tracts bisect the area such that, exclusive of overflow from Coyote Creek, only about 13.8 square miles contribute to the basin runoff. The flow follows a path approximately eight miles in length from the headwaters to the confluence with Coyote Creek; the elevation varies from over 1,100 feet to about 240 feet. The general slope of the streambed is 13 feet per mile.

The flat, alluvial valley through which the creek flows is poorly drained and partially depressed. At the present time the valley floor is given over to orchards and truck farms. Near the Town of Coyote, Fisher Creek veers to the northeast, crosses U.S. Highway 101 and joins Coyote Creek.

In the stream valley the upper 20 to 40 feet of the soil is fine and silty; however, underlaying this is a layer comprised of gravel and boulders containing some sand. This underlaying strata is a productive aquifer that is primarily recharged from precipitation and Coyote Creek infiltration. The ground water flows down the valley to the northwest. In some places, when conditions are right, the water table rises above the streambed and ground water is discharged into Fisher Creek. Subsurface flow in the area is somewhat impeded by a bedrock constriction at the confluence of Fisher and Coyote Creeks and by the pinching off of the aquifers in the cul de sac north of Bailey Avenue and west of Fisher Creek. This condition causes the ground water to come to the surface in the lower portions of Fisher Creek and at the confluence with Coyote Creek.

TABLE 1
DRAINAGE AREAS

Location	Drainage area sq. mi.
Fisher Creek at Live Oak Avenue	2.3
Fisher Creek at Richmond Avenue	7.4
Fisher Creek at Mouth	13.8*

*18.3 with ineffective area east of Highway 101.

The climate is characterized by warm summers, when temperatures often rise above 85 degrees, and mild winters, although temperatures may drop below freezing for short periods. Ninety percent of the rainfall occurs in the late fall or winter months; January is normally the wettest month.

Developments in the Flood Plain

At the present time the valley of Fisher Creek is primarily utilized for orchards and truck farms. However, since World War II Santa Clara County has grown at a rapid rate and the prospects for urbanization appear imminent in the area.

Tentative plans have been formulated to improve the flow protection on Fisher Creek, extend the Santa Teresa Expressway through to connect with Hale Avenue (Orchard), lay out subdivisions and construct a shopping center near Morgan Hill. U.S. Highway 101 that divides the flood plain has the usual commercial establishments that cater to the motoring public. The only industrial development is a mushroom plant located along the stream at Mira Monte Avenue.

FLOOD SITUATION

Sources of Data and Records

The Santa Clara County Flood Control and Water District maintains a stream gage on Fisher Creek near the mouth. This gage has been in operation over 30 years but records are influenced by the concurrent stage on Coyote Creek. Records of Stages and discharges on Coyote Creek have been maintained since 1903. However, regulation of Coyote Creek by reservoirs constructed in 1936 and 1950 makes it necessary to adjust records prior to their construction. Records of streamflow are kept by the U.S. Geological Survey and the Santa Clara County Flood Control and Water District.

Rainfall records have been maintained in Santa Clara County since 1874. Records from about 130 gaging stations, many of which are currently in operation, are available from the Santa Clara County Flood Control and Water District. Rainfall records at N.O.A.A. National Weather Service Stations are published in various climatological data publications.

Maps prepared for this report were based on U.S.G.S. Quadrangle sheets entitled Morgan Hill, California and Santa Teresa Hills, California, both photo revised in 1968. Structural data on bridges and culverts were obtained by field surveys performed by Corps of Engineers, San Francisco District, personnel. Data for cross sections were taken by photogrametric methods.

The elevation of a large known flood is given in Table 2.

TABLE 2

FLOOD CREST ELEVATIONS
FISHER CREEK AT HIGHWAY 101

Date of Crest	Estimated Peak Discharge c.f.s.	Stage [a]	Elevation [b]
23 Dec 1955	1,200	–	240

a Influenced by Coyote Creek.
b Feet, mean sea level datum.

Flood Season and Flood Characteristics

The main flood season for Fisher Creek extends from October through April when flooding may be caused by intense rainstorms over the basin. Floodflow stages can rise from normal flow to extreme flood peaks in a relatively short period of time with high velocity in the main channel.

Factors Affecting Flooding and Its Impact

Obstructions to floodflows – Fisher Creek meanders through an agricultural area where natural obstructions to floodflows include trees, brush and other vegetation growing along the streambanks and in floodway areas. Manmade obstructions under or over the streams such as bridges and culverts can also create more extensive flooding than would otherwise occur.

During floods, trees, brush and other vegetation growing in floodways impede floodflows, creating backwater and increasing flood heights. Trees and other debris may be washed away and carried downstream to collect on bridges and other obstructions to flow. As floodflow increases, masses of debris break loose and a wall of water and debris surges downstream until another obstruction is encountered. Debris may collect against a bridge until the load exceeds its structural capacity and the bridge is destroyed. The limited hydraulic capacity of bridges or culverts where debris collects and retards floodflows may result in flooding upstream, erosion around the culvert entrance and bridge approach embankments, and possible damage to the overlying roadbed.

In general, obstructions restrict flows which result in unpredictable areas of flooding, damage to bridges and culverts; and, an increased velocity of flow immediately downstream. It is impossible to predict the degree or location of the accumulation of debris; therefore, for the purposes of this report, it was necessary to assume that there would be no accumulation of debris to clog any of the bridge or culvert openings in the development of the flood profiles.

Flood damage reduction measures – These measures are limited to the construction and maintenance performed by local interests. Some channel improvement and diking has been carried out in the three and one half miles immediately upstream of the confluence with Coyote Creek. The balance of the stream flows through a natural unimproved channel.

No Federal flood control project has been justified for the area. However, the Santa Clara County Flood Control and Water District has prepared tentative plans for a flood control improvement project on the creek.

Other factors and their impacts – The area inundated near the mouth is due largely to the compounded backwater influence of the Coyote Creek at high stages. One of the most significant factors in the potential flood problem is excess flow from Coyote Creek. Overland flow that leaves Coyote Creek tends to follow along U.S. Highway 101 and the Southern Pacific Railroad, and at low points of the track the Coyote floodwater will cross into the Fisher Creek Basin. The combined flows continue north into the last remaining portion of the old lakebed. There they are impounded and controlled by the outflow through the Railroad and Highway 101 Bridges.

Flood warning and forecasting – The National Oceanic and Atmospheric Administration (NOAA) maintains year-round surveillance of weather conditions. Storm forecasts made by the National Weather Service, NOAA, are furnished to Weather Service district offices for distribution to agencies responsible for flood protection and to the public by local news media.

Personnel from NOAA and the California Department of Water Resources are assigned to the Joint Federal-State River Forecast Center in Sacramento, which monitors weather conditions and river stages on a year-round basis. When floods become imminent, the State Flood Operations Center is activated. It operates on a 24-hour basis, in conjunction with the River Forecast Center, and, among other flood emergency activities, advises all interested parties of flood situations as they develop. The Flood Operations Center furnishes flood information to local news media, law enforcement agencies, and other agencies for dissemination to the public. The River Forecast Center does not issue flood warnings for Fisher Creek.

Flood-fighting and emergency evacuation plans – The Santa Clara County Flood Control and Water District has organized an Emergency Operations Center. The Center consists of the Chief of Emergency Operations aided by a Public Information Officer and an Emergency Coordinator plus related support staffing. Four additional units, Data Collection, Flood Information, Water Operations, and Emergency Actions complete the Organization.

The Emergency Operations Center is maintained in an "Alert" status from 1 October to 1 May each year. When the apparent situation requires 24-hour vigilence, the Center goes into a "Pre-Emergency" operation. As the gravity of the situation increases and flooding is occurring and threatens to increase, a full "Emergency" condition is entered into. Upon termination of emergency conditions, the Center reverts to the "Alert" status until the situation again changes or the flood season terminates.

Under the Center operation, the Data Collection and Flood Information Units primarily collect, organize, coordinate and publish information relating to the flood situation, flooding and flood damage. The Water Operation Unit operates the water-system-reservoirs, pipelines, canals, etc., in order to minimize flooding and flood damage.

The Emergency Actions Unit with available crew does all emergency maintenance within its capabilities and supervises and coordinates the work of others.

Material storage on the flood plain – Storage on the flood plain consists of machinery and materials generally associated with the agricultural industry. Potential flood depths are not great and there is little danger of stored material being swept away from its original position.

PAST FLOODS

Summary of Historical Floods

During the flood of December 1955, approximately 480 acres of the basin were inundated resulting in an estimated $98,000 agricultural damage; other damaging floods have taken place but are not well recorded.

Flood Records

Information on historical floods in the Fisher Creek Basin were obtained from stream-gaging records; the Santa Clara County Flood Control and Water District have taken from the stream gage located near the mouth of Fisher Creek. Gage records from this gage must be correlated with the concurrent water surface profile of the Coyote Creek.

Some high water mark information was obtained from old records. Newspapers and other historical documents were searched for information concerning past floods.

Flood Descriptions

Because of the small size of the basin and the predominance of agriculture as the major land use little reference has been made to the area in accounts of past floods.

FUTURE FLOODS

Floods of the same or larger magnitude as those that have occurred in the past could occur in the future. Larger floods have been experienced in the past on streams with similar geographical and physiographical characteristics as those found in the study area. Similar combinations of rainfall and runoff which caused these floods could occur in the basin. Therefore, to determine the flooding potential of the study area, it was necessary to consider storms and floods that have occurred in regions of like topography, watershed cover and physical characteristics. Discussion of the future floods in this report is limited to those that have been designated as the Intermediate Regional Flood and the Standard Project Flood. The Standard Project Flood represents a reasonable upper limit of expected flooding in the study area. The Intermediate Regional Flood may reasonably be expected to occur more frequently although it will not be as severe as the infrequent Standard Project Flood.

Intermediate Regional Flood

The Intermediate Regional Flood is defined as one that could occur once in 100 years on the average, although it could occur in any year. The peak flow of this flood was developed from statistical analyses of streamflow and precipitation records and runoff characteristics for the stream under study and from other similar streams in the region.

Peak discharges for the Intermediate Regional Flood at several locations in the study area are shown in tabular form in the section following the Standard Project Flood paragraph.

Standard Project Flood

The Standard Project Flood is defined as a major flood that can be expected to occur from a severe combination of meterological and hydrological conditions that is considered reasonably characteristic of the geographical area in which the study area is located, excluding extremely rare combinations. The Corps of Engineers, in cooperation with the NOAA Weather Service, has made comprehensive studies and investigations based on the past records of experienced storms and floods and has developed generalized procedures for estimating the flood potential of streams. Peak discharges for the Standard Project Flood at selected locations in the study area are shown in the table following this section. The relative water surface elevations for the Intermediate Regional Flood and the Standard Project Flood are shown on the high water profile plates at the end of the report.

Notably severe storms which have proven critical in establishing the Standard Project Flood of other streams in the San Francisco Bay Area are 9-12 December 1937, 21-24 December 1955 and 11-13 October 1962.

The Corps of Engineers does not assign a frequency to the Standard Project Flood. It is larger than the Intermediate Regional Flood and generally is larger than any flood that has occurred on the subject stream.

In the recorded history of the Western United States, it is doubtful if any of the streams have experienced the largest flood that is likely to occur. Floods potentially larger than the Standard Project Flood are entirely possible but are generally considered only in the design of dams. Consideration of these extremely rare floods should not be overlooked in the solution of any problem.

TABLE 3
PEAK FLOWS FOR INTERMEDIATE REGIONAL AND STANDARD PROJECT FLOODS

			Intermediate Regional Flood c.f.s.		Standard Project Flood Discharge c.f.s.	
Location	River Mile	Drainage Area sq. mi.	Without Coyote Creek Overflow	With Coyote Creek Overflow	Without Coyote Creek Overflow	With Coyote Creek Overflow
Live Oak Ave.	5.9	2.3	600	600	710	1,020
Richmond Ave.	3.3	7.4	1,650	1,650	2,000	7,200
Highway 101	.04	13.8	2,300	2,300	2,900	10,000

TABLE 4

FLOOD ELEVATIONS
(FISHER CREEK AT U.S. HIGHWAY 101)

Flood	Elevation [a]
Standard Project	253.5
Intermediate Regional	246.5
23 December 1955	240.0

[a] Feet, mean sea level datum.

Frequency

A frequency curve of peak flows was constructed on the basis of available information and computed flows of floods up to the magnitude of the Standard Project Flood. The frequency curve thus derived, which is available on request, reflects the judgment of engineers who have studied the area and are familiar with the region; however, it must be regarded as approximate and should be used with caution in connection with any planning of flood plain use. Floods larger than the Standard Project Flood are possible but the combinations of factors necessary to produce such large flows would be extremely rare.

Hazards of Large Floods

The hazards from great floods cannot be entirely expressed as tangibles. Although relationships, such as depth and velocity of flow, rate of rise and duration of flooding are a measure of the hazard, other less tangible factors must be considered. The amount and extent of damage caused by any flood depends also on the topography of the area flooded and developments in the flood plain. Deep floodwater flowing at high velocity and carrying floating debris would create conditions hazardous to persons or vehicles attempting to cross flooded areas. Hazardous flood conditions are relative to the size of the persons or objects experiencing the hazard. When potential loss of life is a factor velocity of flow greater than two and a half feet per second, combined with depths of flow of one foot or more, must be considered hazardous, and if small children are involved, these figures may be excessive. Structural hazard generally begins where floodwaters first enter the structure or when the situation changes from nuisance to serious. Rapidly rising and swiftly flowing floodwater may trap persons in homes that are ultimately destroyed or in vehicles that are ultimately submerged. Waterlines can be ruptured by deposits of debris and the force of floodwaters, creating the possibility of contaminated domestic water supplies. Ruptured oil pipelines could result in contamination of flood plain areas by deposition of petroleum products. Decaying flood-deposited garbage or other organic materials could create health hazards. Isolation of areas by floodwater could create hazards in terms of medical, fire, or law enforcement emergencies.

Flooded areas and flood damages – The areas in the Laguna Seca that would be flooded by the Standard Project Flood are shown on Plate 2, which is also an index map to Plates that show the area that would be flooded by the Intermediate Regional and Standard Project Floods. The actual limits of these overflow areas may vary somewhat from those on the maps because the contour interval and scale of the maps do not permit precise plotting of the flooded area boundaries. The areas that could be flooded by the Intermediate Regional and Standard Project Floods include agricultural lands and residential sections and the associated streets, roads, and private and public utilities in the basin. Considerable damage to these facilities would occur during an Intermediate Regional Flood. However, due to the wider extent, greater depths of flooding, higher velocity flow and longer duration of flooding during a Standard Project Flood, damage would be even more severe than during an Intermediate Regional Flood. High water profile plates at the end of the report show water surface profiles of the Intermediate Regional and Standard Project Floods. Depth of flow in the channel can be estimated from these illustrations. Typical cross sections of the flood plain at selected locations, together with the water surface elevation and lateral extent of the Intermediate Regional and Standard Project Floods are shown on Plates following the high water profiles.

Obstructions – During floods, debris collecting on bridges and culverts could decrease their carrying capacity and cause greater water depths (backwater effect) upstream of these structures. Since the occurrence and amount of debris are indeterminate factors, only the physical characteristics of the structures were considered in preparing profiles of the floods. Similarly, the maps of flooded areas show the backwater effect of obstructive bridges and culverts, but do not reflect increased water surface elevation that could be caused by debris collecting against the structures, or by deposition of silt in the stream channel under structures. All of the bridges and culverts in the study areas are obstructive to flow at the higher discharges that could be expected from the Intermediate Regional Flood. The following table lists water surface elevations at selected bridges and culverts.

TABLE 5

ELEVATION DATA
BRIDGES OR CULVERTS ACROSS FISHER CREEK

Location	Mileage Above Mouth	Under Clearance Elevation[a]	Water Surface Elevation Intermediate Regional Flood	Standard Project Flood	1955 Flood
Highway 101	.04	243.6	246.5	250.5	–
SPRR	.09	249.0	246.7	254.7	–
Santa Teresa Expressway	1.06	249.0	246.7	254.7	–
Bailey Avenue	2.03	252.0	252.6	254.7	–
Laguna Avenue	2.86	259.9	260.9	261.5	258.2
Richmond Avenue	3.53	267.3	266.6	267.7	–
Palm Avenue	4.52	280.1	282.8	284.3	279.7
Santa Teresa Expressway (Hale Avenue)	4.72	283.1	287.5	289.2	–
Kalana Avenue	4.92	287.8	289.5	291.2	–
Santa Teresa Expressway (Hale Avenue)	5.18	290.7	292.1	294.0	–
San Bruno Avenue	5.32	294.3	295.8	297.3	–
Mushroom Factory	5.83	298.3	301.5	302.8	–
Miramonte Avenue	5.90	300.0	302.8	303.4	–
Private Road	6.09	303.0	303.7	305.0	–
Hale Avenue	6.28	307.4	309.0	310.2	–
Live Oak Avenue	6.36	308.1	309.6	310.3	–
Madrone Avenue	6.95	320.9	322.2	323.0	–
Tilton Avenue	7.70	330.8	334.1	334.6	–

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[a] Feet, mean sea level datum of the top of the opening of the bridge or culvert.

Velocities of flow — Water velocities during floods depend largely on the size and shape of the cross sections, conditions of the stream, and the bed slope, all of which vary on different streams and at different locations on the same stream. During an Intermediate Regional Flood, velocities of main channel flow in the upper reaches of the stream in the study area would be about 10 feet per second. Water flowing at this rate is capable of causing severe erosion to streambanks and fill around bridge abutments and transporting large objects. In the lower reaches, the velocities would be lower averaging one to six feet per second. It is expected that velocity of flow during a Standard Project Flood would be slightly higher than during an Intermediate Regional Flood. Overbank flow would average one to three feet per second. Water flowing at two feet per second or less would deposit debris and silt.

Rates of rise and duration of flooding — Intense rainfalls that accompany severe storm fronts usually produce the floods occurring in the Fisher Creek Area. There is a time lag of at least several hours to a half a day before overbank flooding occurs. Floods generally rise rapidly and stay out of banks for short periods of time. For the Intermediate Regional and Standard Project Floods, the table below gives the maximum rate of rise, height of rise, time of rise, and duration of flood stage.

TABLE 6

RATES OF RISE AND DURATION
(At U.S. HIGHWAY 101)

Flood	Average Rate of Rise ft/hr	Height of Rise ft	Time of Rise hrs	Duration of Flood Stage hrs
Intermediate Regional Flood	1.7	11	6.5	13
Standard Project Flood	0.9	20	2.3	38

Photographs, future flood heights — The levels that the Intermediate Regional and Standard Project Floods are expected to reach at various locations in the basin are shown on the following photographs.

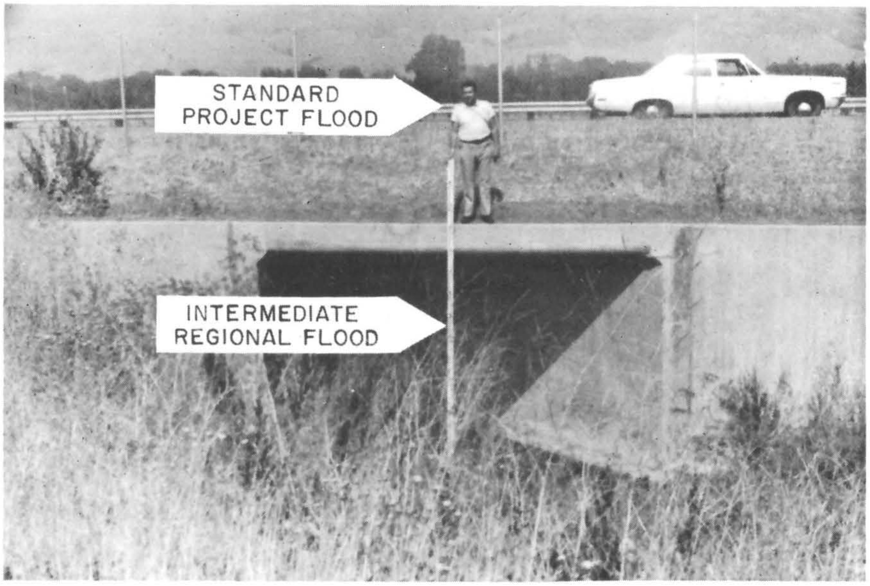


FIGURE 1 - Potential Flood Heights, Santa Teresa Expressway.

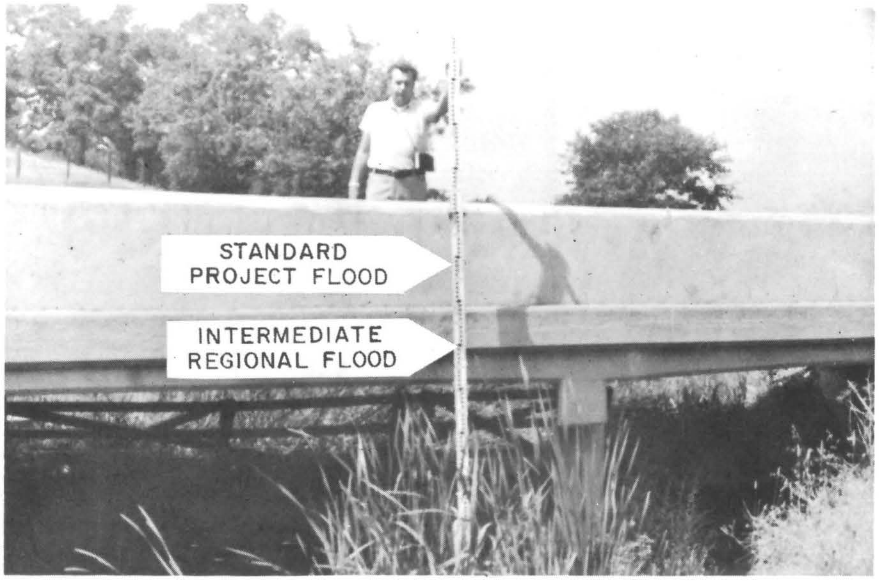


FIGURE 2 - Potential Flood Heights, Bailey Avenue

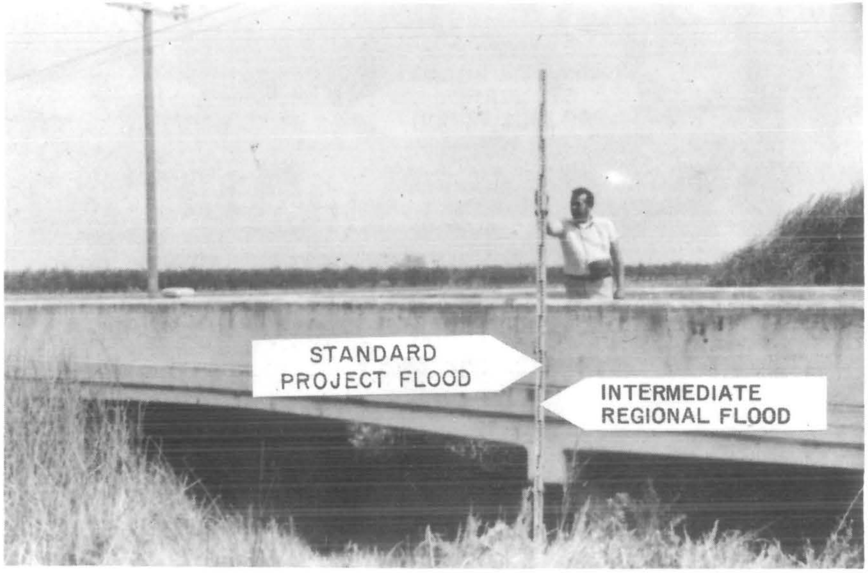


FIGURE 3 - Potential Flood Heights, Laguna Avenue.

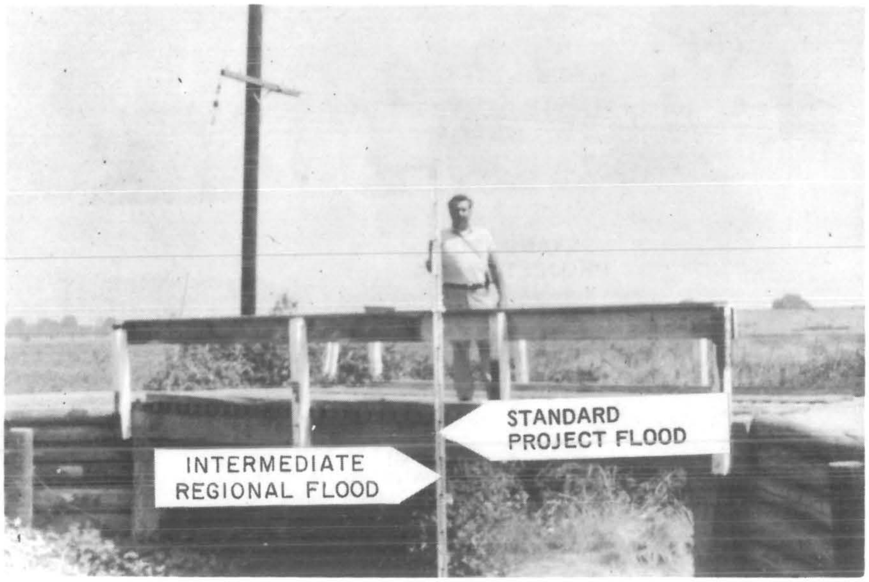


FIGURE 4 - Potential Flood Heights, Richmond Avenue

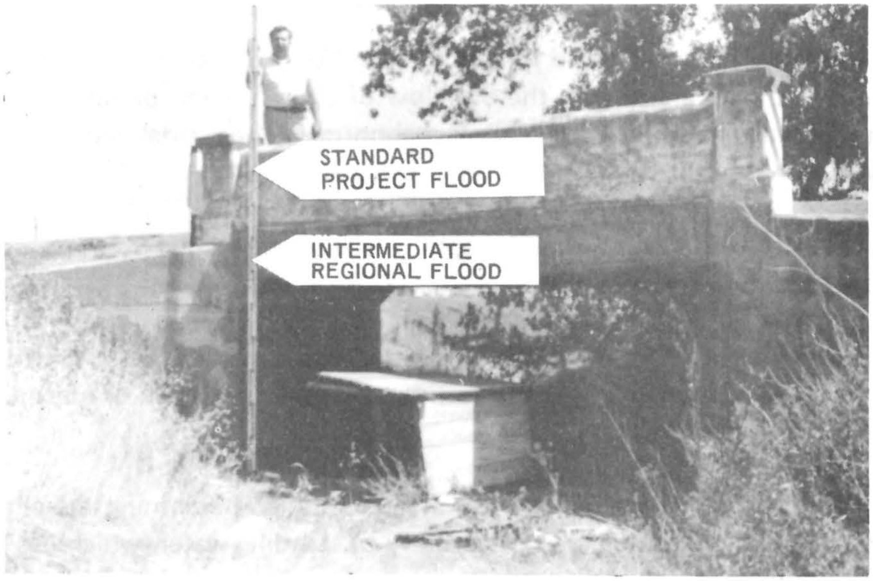


FIGURE 5 - Potential Flood Heights, Palm Avenue.

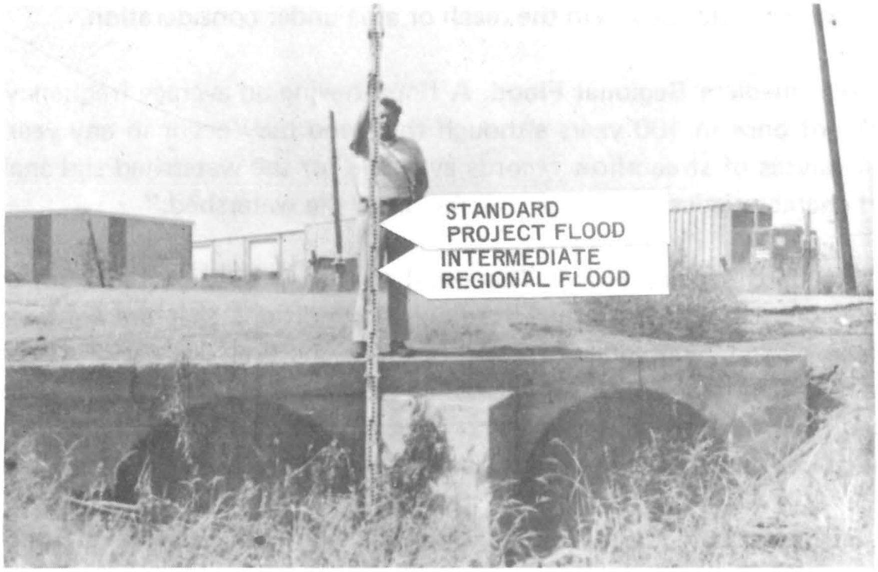


FIGURE 6 - Potential Flood Heights, Miramonte Avenue.

GLOSSARY

Flood. The general and temporary condition of partial and complete inundation of normally dry land areas from the overflow of stream, river, or other inland waterways. Flooding may also result from tidal surges, abnormally high tidal water, tsunamis or rising coastal waters that result from hurricanes or other severe storms.

Flood Crest. The maximum depth or elevation reached by the waters of a flood at a given location.

Flood Peak. The maximum instantaneous discharge rate of a flood at a given location. It usually occurs at or near the time of maximum stage or crest. Discharge rate is given in cubic feet per second (C.F.S.)

Flood Plain. The relatively flat area or low land adjoining the channel of a river, stream, watercourse, ocean, lake or other body of standing water, which has been or may be covered by floodwater.

Flood Profile. A graph showing the relationship of water surface elevation to location, the latter generally expressed as distance above mouth for a stream of water flowing in an open channel. It is generally drawn to show surface elevation for the crest of a specific flood, but may be prepared for conditions at a given time or stage.

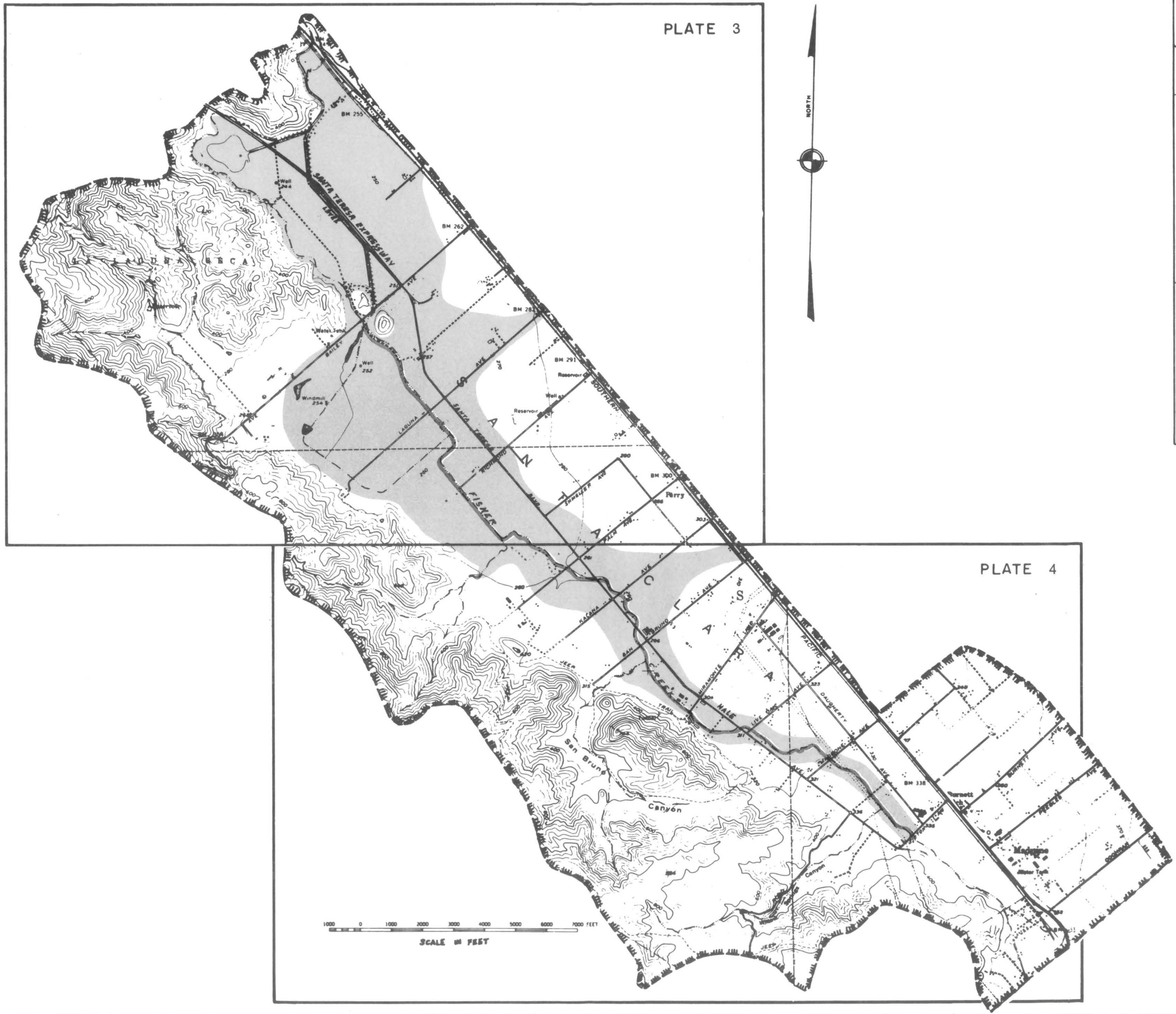
Flood Stage. The depth or elevation at which overflow of the natural banks of a stream or body of water begins in the reach or area under consideration.

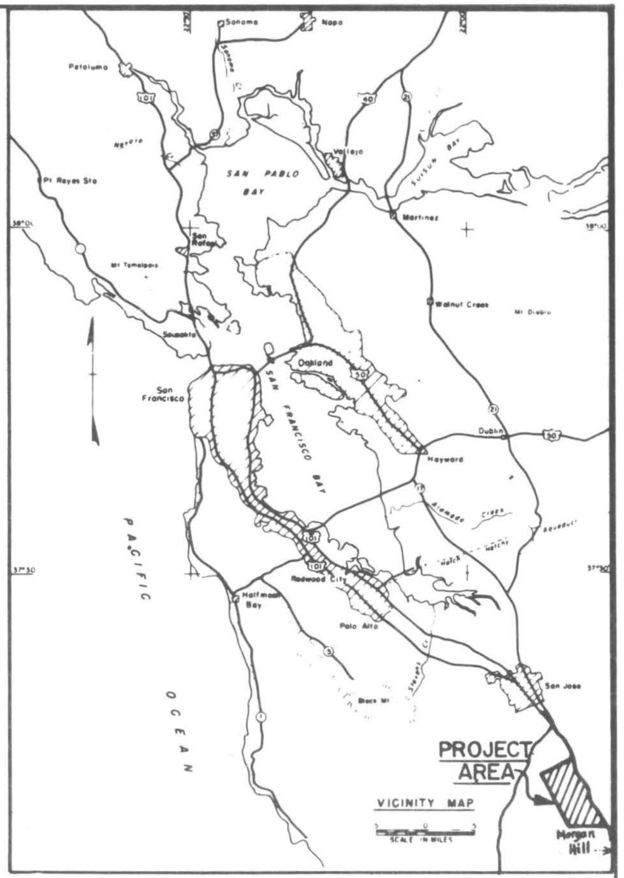
Intermediate Regional Flood. A flood having an average frequency of occurrence in the order of once in 100 years although the flood may occur in any year. It is based on statistical analyses of streamflow records available for the watershed and analysis of rainfall and runoff characteristics in the "general region of the watershed."

Standard Project Flood. The flood that may be expected from the most severe combination of meterological and hydrological conditions that are considered reasonably characteristic of the geographical region in which the drainage basin is located, excluding extremely rare combinations. Such floods, as used by the Corps of Engineers, are intended as practicable expressions of the degree of protection that should be sought in the design of flood control works, the failure of which might be disastrous.

Right or Left Bank The bank on the right or left side of a river, stream, or watercourse looking downstream.

Underclearance Elevation. The elevation at the top of the opening of a culvert, or other structure through which water may flow along a watercourse.





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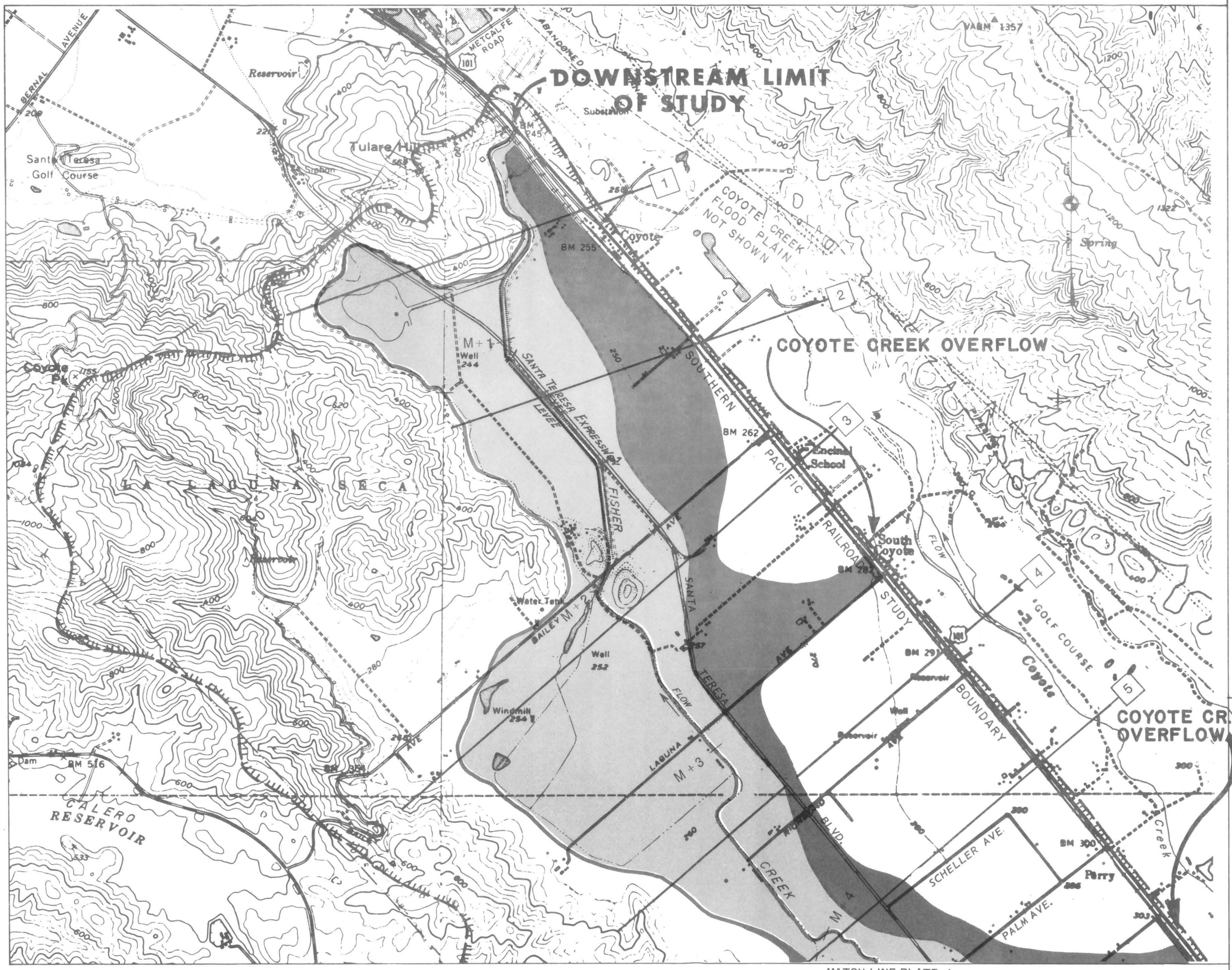
INDEX MAP – FLOODED AREA

JULY 1973



MATCH LINE PLATE 4

LEGEND

OVERFLOW LIMITS

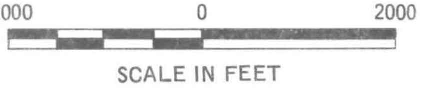
▨	INTERMEDIATE REGIONAL FLOOD	STANDARD PROJECT FLOOD
M+4	MILES ABOVE MOUTH	
22	CROSS SECTION	
—260—	GROUND ELEVATION IN FEET SEA LEVEL DATUM	
—··—	CHANNEL	
╥╥╥	DRAINAGE BOUNDARY.	

MAP BASED ON U.S.G.S. 7.5 MIN. QUADRANGLE SHEETS MORGAN HILL, CALIFORNIA 1955 AND SANTA TERESA HILLS, CALIFORNIA 1953.

LIMITS OF OVERFLOW SHOWN MAY VARY FROM ACTUAL LOCATION ON GROUND AS EXPLAINED IN THE REPORT.

AREAS OUTSIDE THE FLOODPLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOFF.

MINIMUM CONTOUR INTERVAL IS 40 FT.



SCALE IN FEET

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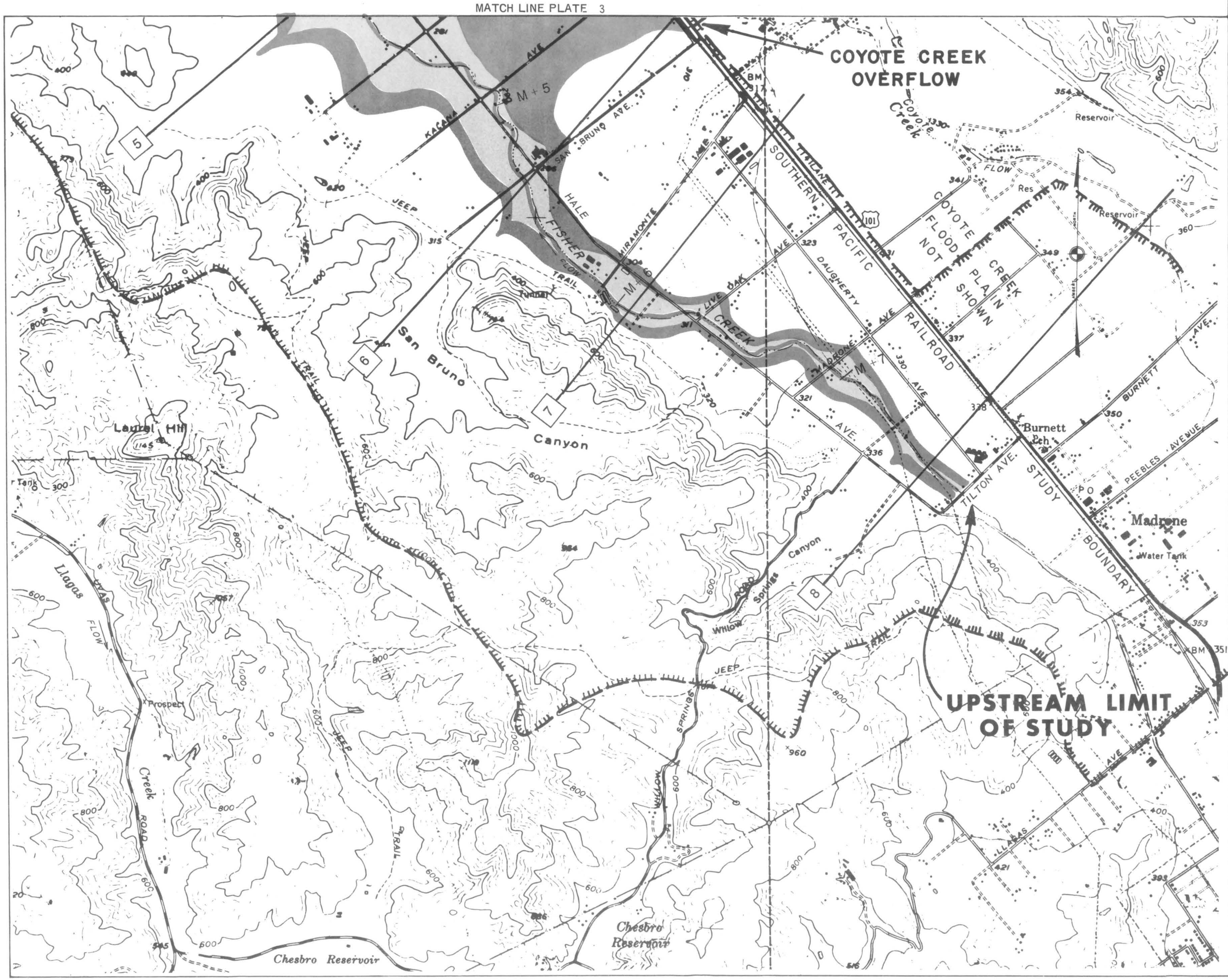

LEGEND

OVERFLOW LIMITS

▨	INTERMEDIATE REGIONAL FLOOD	STANDARD PROJECT FLOOD
M+4	MILES ABOVE MOUTH	
22	CROSS SECTION	
—260—	GROUND ELEVATION IN FEET SEA LEVEL DATUM	
▬	CHANNEL	
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2000 0 2000
SCALE IN FEET

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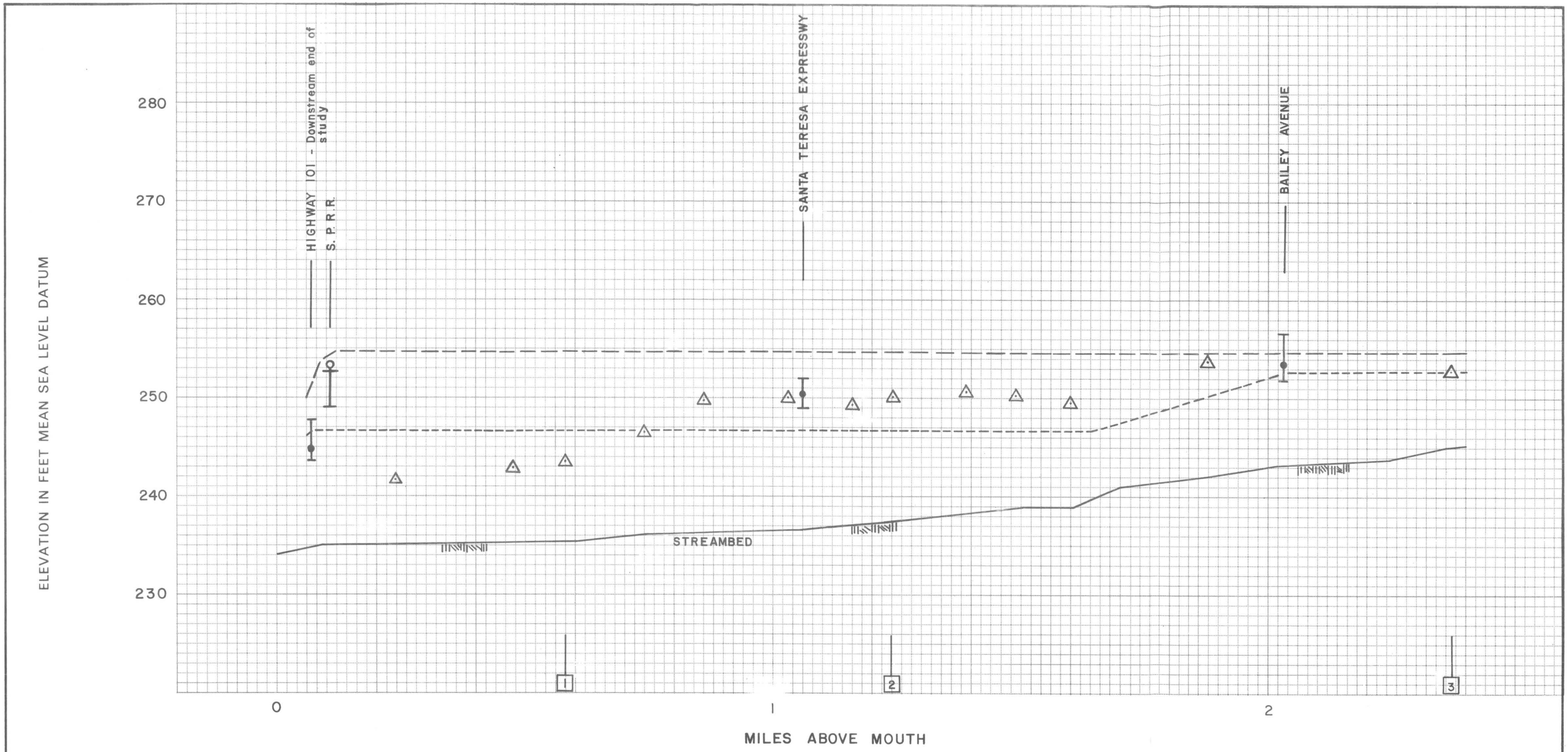

LEGEND

- TOP OF BRIDGE RAILING
- BRIDGE FLOOR
- UNDERCLEARANCE
- TOP OF RAIL (RAILROAD BRIDGE)
- △ TOP OF LOW BANK
- ———— STANDARD PROJECT FLOOD
- -------- INTERMEDIATE REGIONAL FLOOD
- 3 CROSS SECTION NUMBER

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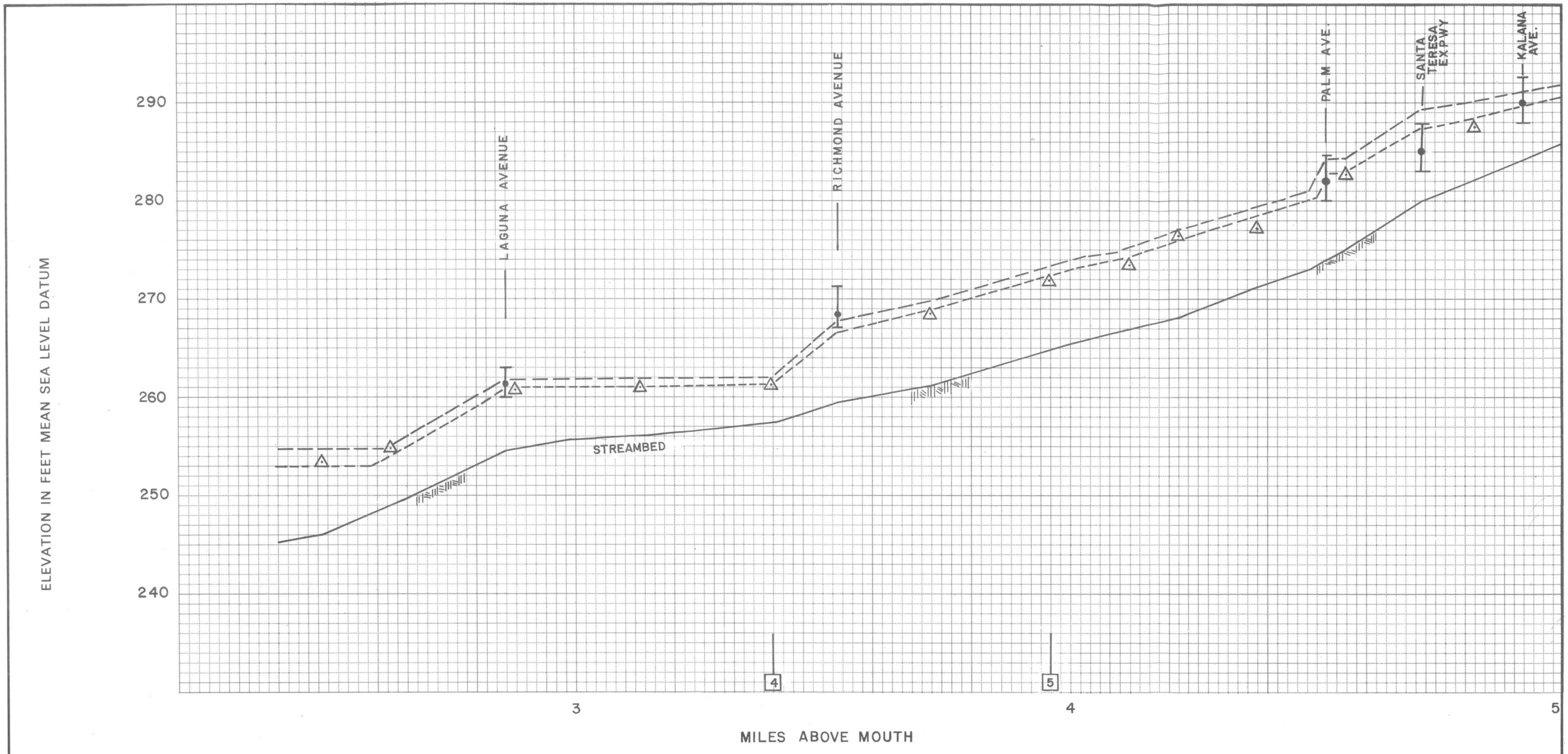

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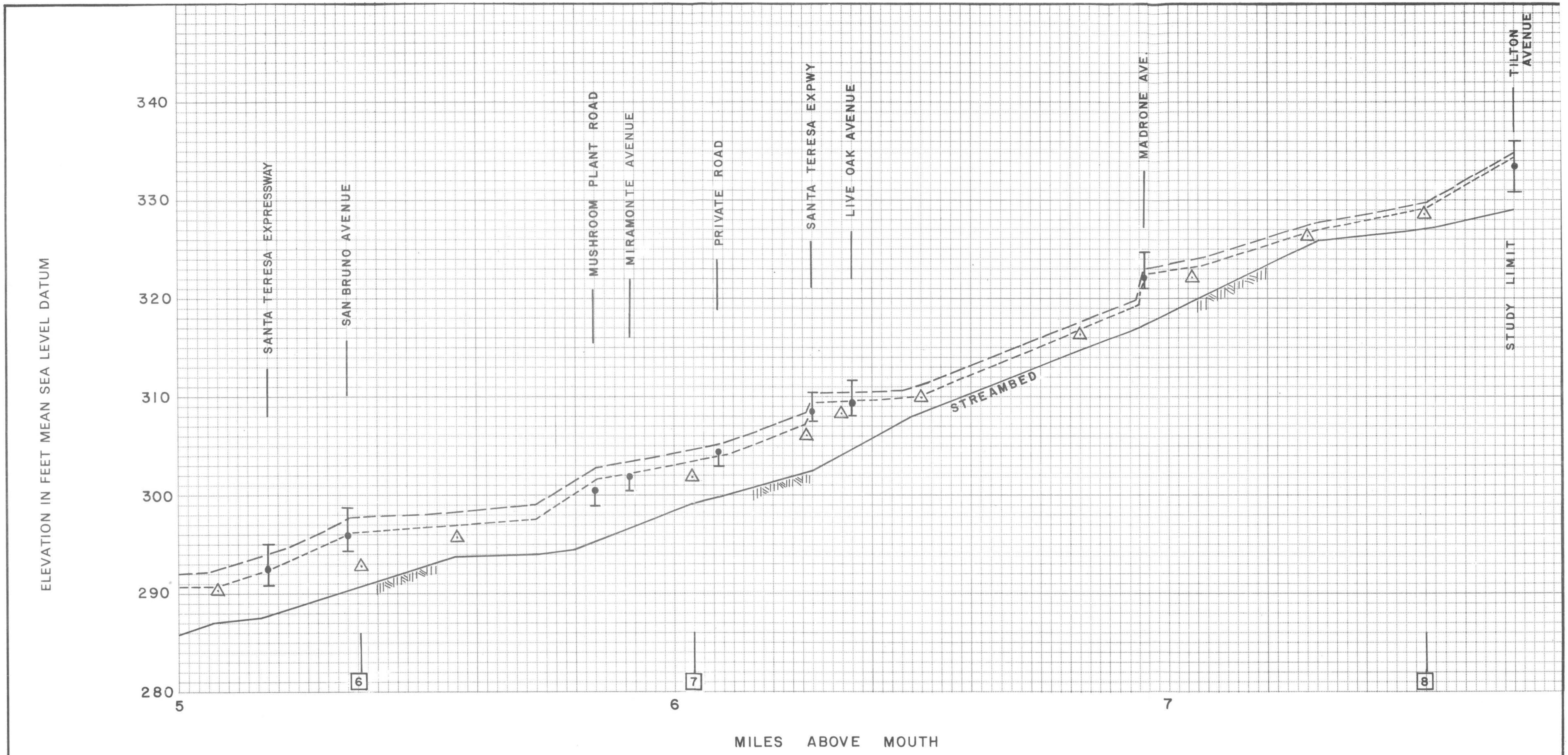
PLATE 6



LEGEND

- TOP OF BRIDGE RAILING
- BRIDGE FLOOR
- UNDERCLEARANCE
- TOP OF RAIL (RAILROAD BRIDGE)
- △ TOP OF LOW BANK
- — — — STANDARD PROJECT FLOOD
- - - - - INTERMEDIATE REGIONAL FLOOD
- 8 CROSS SECTION NUMBER

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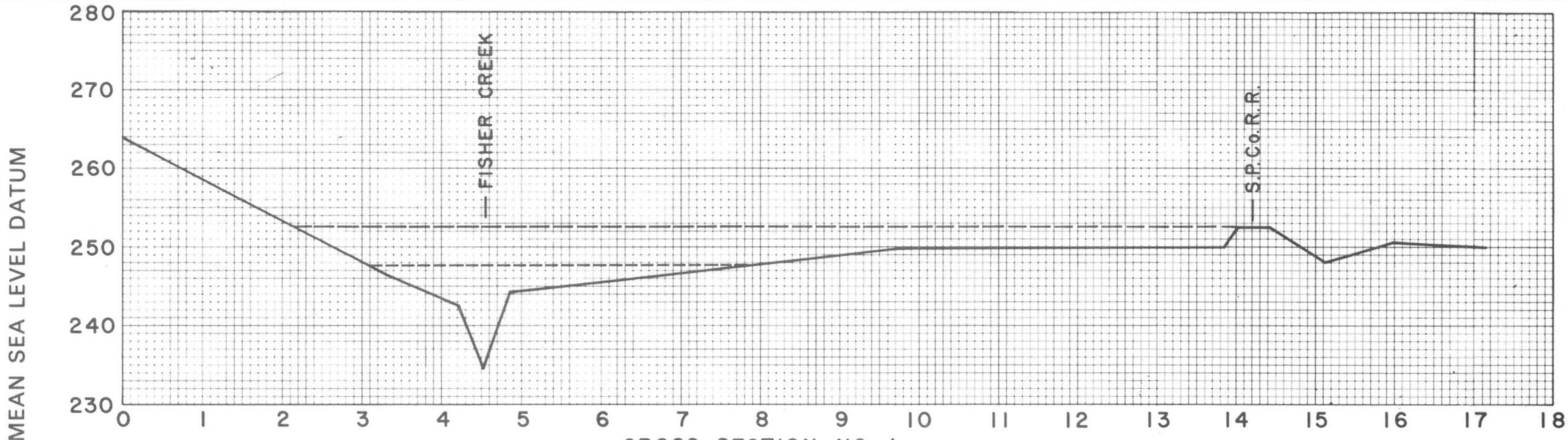
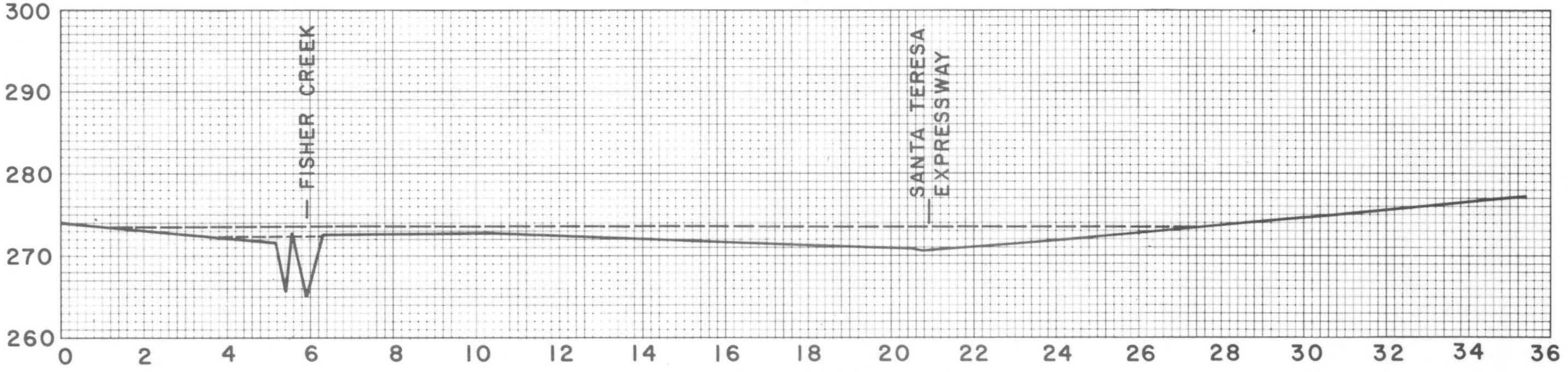
PLATE 7



CROSS SECTION NO. 1
MILE 0.58



CROSS SECTION NO. 5
MILE 3.5

LEGEND

——— STANDARD PROJECT FLOOD
- - - - INTERMEDIATE REGIONAL FLOOD
SECTIONS TAKEN LOOKING DOWNSTREAM

HORIZONTAL DISTANCE IN HUNDREDS OF FEET

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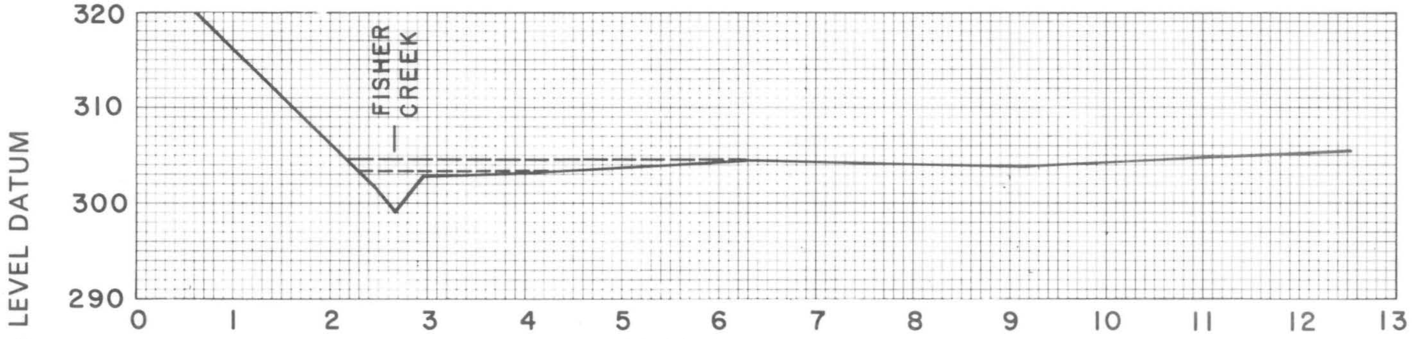
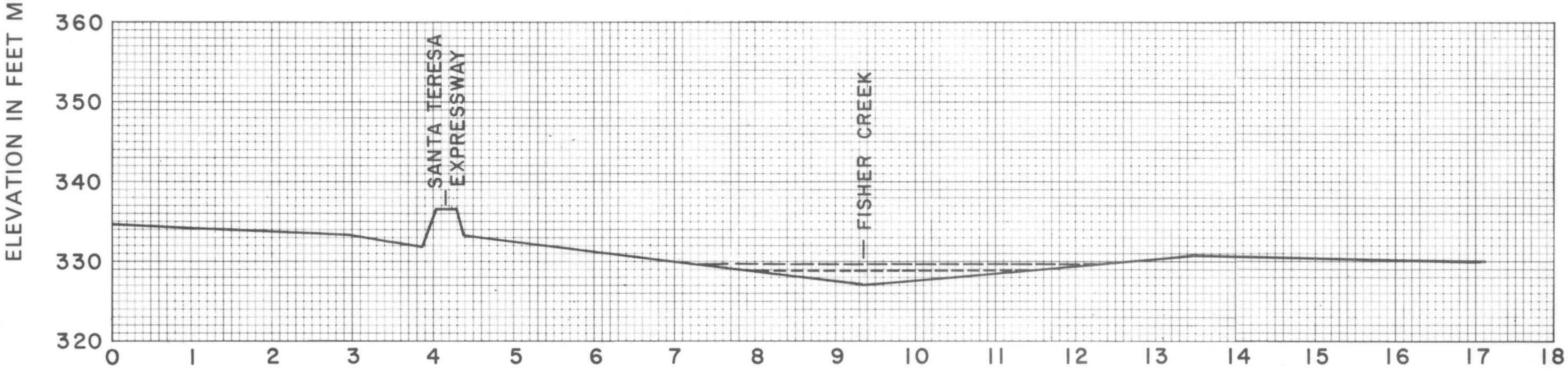


CROSS SECTION NO. 7
MILE 5.5



CROSS SECTION NO. 8
MILE 6.9

LEGEND

——————— STANDARD PROJECT FLOOD
- - - - - - - - - INTERMEDIATE REGIONAL FLOOD
SECTIONS TAKEN LOOKING DOWNSTREAM

HORIZONTAL DISTANCE IN HUNDREDS OF FEET

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